

## **The Am stars: peculiarities, pulsations and planets**

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The metallic-line Am stars are a slowly rotating chemically peculiar sub-class of the A-type stars. Their peculiarities are thought to arise from the interplay between gravitational settling and radiative acceleration. Stars need to be rotating slower than about 120 km/s in order for radiative diffusion to compete with meridional circulation. Most, but not all, Am stars appear to be members of binary systems with periods between 2–10 days.

Recent studies have found that a significant fraction of Am stars have low-level pulsations, which is at odds with the need for stability to produce the chemical peculiarities. In addition there is increasing evidence for planets orbiting around A-type stars.

Using K2 we will collect a statistically-significant sample of Am stars, in order to:

1. study the interaction between pulsations and radiative diffusion,
2. perform a statistical study of the incidence of pulsations and binarity within the Am stars,
3. search for additional transiting planetary systems around A-type stars.

We will conduct in-depth periodogram analyses to search for stellar pulsations and low-level variability as we have previously applied to Kepler data. We will complement the photometric analyses with ground-based spectroscopy as necessary.

In conclusion, the K2 mission provides a unique opportunity to investigate the photometric variability of Am stars at micro-magnitude precision. This will provide new insights into the competition between stellar pulsations and element separation processes, as well as the nature of the stellar (and sub-stellar) companions to these chemically peculiar A-type stars.